

REMARKS

A. Background

Claims 50, 51, 53-60, 77-82 and 84-89 were pending in the application at the time of the Office Action. Claims 50, 51, 53-60, 77-82 and 84-89 were rejected as being anticipated by and/or obvious over cited art. By this response applicant has cancelled claim 55; amended claims 50, 51, 57, 59, 60, 80, 81, 84, and 86-89; and added new claims 90-98. As such, claims 50, 51, 53, 54, 56-60, 77-82 and 84-98 are presented for the Examiner's consideration in light of the following remarks.

B. Proposed Claim Amendments

Applicant has herein amended claims 50, 51, 57, 59, 60, 80, 81, 84, and 86-89 to further clarify, more clearly define, and/or broaden the claimed inventions to expedite receiving a notice of allowance. For example, applicant has amended independent claims 50 and 81 to clarify that the n-type emitter layer is formed "directly on" the p-type base layer and the indium-containing p-type nitride semiconductor layer "does not contact said n-type emitter layer." The amendments to the existing claims are supported in the application at least by Figures 1 and 3 and the corresponding discussion in the specification. Other clarifying amendments have also been made to a number of existing dependent claims to remedy various formalities.

The new claims are supported by prior claim language. For example, new claim 90 represents most of the limitations of prior claim 50 with the limitations of prior claim 60 incorporated therein. New claims 91-98 correspond to various prior dependent claims.

In view of the foregoing discussion, applicant submits that the amendments to the claims do not introduce new matter and entry thereof is respectfully requested.

C. Objections to the Claims

Page 3 of the Office Action objects to claims 51, 54, 57, 59, 60, 84, and 86-89 because of various informalities. In light of amendments made herein to the aforementioned claims, applicant respectfully submits that the objections have been overcome and should be withdrawn.

D. Rejection based on 35 USC § 102

Pages 3-8 of the Office Action reject claims 50, 51, 53, 55, 56, 58, 77-82 and 85-89 under 35 USC § 102(b) as being anticipated by U.S. Publication No. 2002/0195619 to Makimoto et al. ("*Makimoto*"). Inasmuch as claim 55 has been cancelled herein, the rejection of that claim has been rendered moot. Regarding the rest of the rejected claims, Applicant respectfully traverses this rejection and submits that *Makimoto* does not anticipate claims 50, 51, 53, 56, 58, 77-82 and 85-89 at least because *Makimoto* does not include each and every claim limitation recited in the rejected claims. Of the rejected claims, claims 50 and 81 are independent claims.

As shown in Figure 10, *Makimoto* discloses a p-type InGaN base layer 106 with an n-type emitter layer 107 being formed directly on the p-type InGaN base layer 106. Applicant notes that the Office Action has equated emitter layer 107 of *Makimoto* to the claimed "n-type emitter layer." Applicant further notes that the Office Action somehow considers the base layer 106 of *Makimoto* as being separable and has equated the lower portion of base layer 106 to the claimed "p-type base layer" and the upper portion of base layer 106 to the claimed "indium-containing p-type nitride semiconductor layer." As a result, the "n-type emitter layer" 107 is formed directly on the "indium-containing p-type nitride semiconductor layer" (i.e., the upper portion of base layer 106), which is necessarily formed directly on the "p-type base layer" (i.e., the lower portion of base layer 106).

Because the “n-type emitter layer” 107 of *Makimoto* is not formed directly on the “p-type base layer” (i.e., the lower portion of base layer 106) and because the “indium-containing p-type nitride semiconductor layer” (i.e., the upper portion of base layer 106) directly contacts the “n-type emitter layer” 107, Applicant submits that *Makimoto* does not disclose or suggest “**an n-type emitter layer formed directly on said p-type base layer,**” or “**an indium-containing p-type nitride semiconductor layer ... [that] does not contact said n-type emitter layer,**” as recited in amended independent claims 50 and 81. Accordingly, Applicant respectfully requests that the anticipation rejection with respect to claims 50 and 81 be withdrawn.

Claims 51, 53, 56, 58, 77-80, 82 and 85-89 depend from claims 50 and 81 and thus incorporate the limitations thereof. As such, applicant submits that claims 51, 53, 56, 58, 77-80, 82 and 85-89 are distinguished over the cited art for at least the same reasons as discussed above with regard to claims 50 and 81. Accordingly, Applicant respectfully requests that the anticipation rejection with respect to claims 51, 53, 56, 58, 77-80, 82 and 85-89 also be withdrawn.

E. Rejection based on 35 USC § 103

Pages 9-13 of the Office Action reject claims 54, 57, 59, 60, and 84 under 35 USC § 103(a) as being unpatentable over *Makimoto* in view of a paper entitled *Low-Resistance Nonalloyed Ohmic Contact to p-type GaN Using Strained InGaN Contact Layer* by Kumakura et al. (“*Kumakura*”). *Kumakura* is cited simply for allegedly teaching a p-type nitride semiconductor layer having an indium mole fraction higher than an indium mole fraction of a p-type InGaN base layer. Applicant respectfully traverses this rejection and submits that even if, *arguendo*, it would have been obvious to combine *Makimoto* and *Kumakura* in the allegedly obvious manner set forth in the Office Action, the resulting combination would still not teach or suggest all of the claim limitations.

Claims 54, 57, 59, 60, and 84 each depend from claim 50 or 81 and thus incorporate the limitations thereof. As such, Applicant submits that claims 54, 57, 59, 60, and 84 are distinguished over the cited art for at least the same reasons as discussed above with regard to claims 50 or 81. That is, even if *Makimoto* and *Kumakura* were combined in the allegedly obvious fashion, the resulting combination would still not disclose or suggest “**an n-type emitter layer formed directly on said p-type base layer,**” or “**an indium-containing p-type nitride semiconductor layer ... [that] does not contact said n-type emitter layer.**” Accordingly, Applicant respectfully requests that the obviousness rejections with respect to claims 54, 57, 59, 60, and 84 be withdrawn.

No other objections or rejections are set forth in the Office Action.

F. New Claims

Applicant submits that new claims 90-98 are also distinguished over the cited art of record. For example, claim 90 recites “**said indium-containing p-type nitride semiconductor layer has an indium mole fraction higher than the indium mole fraction of said p-type InGaN base layer.**” Applicant submits that none of the cited art, individually or combined, teach or suggest these limitations.

As noted above, the above-identified limitation has been incorporated from prior claim 60. In the rejection of claim 60, the Office Action has conceded that *Makimoto* does not teach the above-identified limitation and has cited to *Kumakura* to remedy this deficiency of *Makimoto*. However, Applicant respectfully disagrees that *Kumakura* teaches the claimed limitation. While it appears that the Office Action is correct in asserting that *Kumakura* teaches an “increase In mole fraction of a p-type InGaN contact layer of up to 0.19,” this is not what is claimed. Applicant submits that while *Kumakura* discloses In mole fraction amounts of a contact layer, *Kumakura* does not even refer to In

mole fraction amounts of any other layer, let alone discuss In mole fraction relationships between layers. As such, contrary to the assertion of the Office Action, Applicant submits that *Kumakura* fails to remedy the deficiency of *Makimoto*. As such, Applicant submits that neither of the cited references teach “**said indium-containing p-type nitride semiconductor layer has an indium mole fraction higher than the indium mole fraction of said p-type InGaN base layer,**” as recited in new claim 90.

New claims 91-98 depend from claim 90 and thus incorporate the limitations thereof. As such, new claims 91-98 are distinguished over the cited art for at least the reasons given above regarding claim 90.

G. Conclusion

Applicant notes that this response does not discuss every reason why the claims of the present application are distinguished over the cited art. Most notably, applicant submits that many if not all of the dependent claims are independently distinguishable over the cited art. Applicant has merely submitted those arguments which it considers sufficient to clearly distinguish the claims over the cited art.

In view of the foregoing, applicant respectfully requests the Examiner’s reconsideration and allowance of claims 50, 51, 53, 54, 56-60, 77-82 and 84-98 as amended and presented herein.

The Commissioner is hereby authorized to charge payment of any of the following fees that may be applicable to this communication, or credit any overpayment, to Deposit Account No. 23-3178: (1) any filing fees required under 37 CFR § 1.16; (2) any patent application and reexamination processing fees under 37 CFR § 1.17; and/or (3) any post issuance fees under 37 CFR § 1.20. In addition, if any additional extension of time is required, which has not otherwise been requested,

please consider this a petition therefor and charge any additional fees that may be required to Deposit Account No. 23-3178.

In the event there remains any impediment to allowance of the claims which could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate such an interview with the undersigned.

Dated this 14th day of October 2008.

Respectfully submitted,

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